CTEH® CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
December 02, 2014

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)
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CTEH® CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vac truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for December 02, 2014 07:00 to December 03, 2014 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for chlorine (Cl_2), hydrogen sulfide (H_2S), hydrochloric acid (HCl), percent of the Lower Explosive Limit (LEL), oxygen (O_2), peroxides, sulfur dioxide (SO_2), sulfuric acid (H_2SO_4), and volatile organic compounds (VOCs), with instruments such as Gastec® pumps with chemical-specific colorimetric tubes, RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area, at fixed locations in the surrounding community, and along the perimeter of the facility in the community. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, fixed community real-time air monitoring locations, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems© AreaRAE units with ProRAE Guardian system at four locations on the fence line of the facility within the work area. AreaRAEs were equipped with sensors to detect VOCs, LEL, H_2S, and SO_2. Field responders confirmed that LEL readings up to 2.9% were due to electronic sensor drift, and the LEL sensor was recalibrated. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

No particulate monitoring was conducted during this reporting period due to heavy rain.

Table 1: Manually-Logged Real-Time Air Monitoring Summary[1]
December 02, 2014 07:00 – December 03, 2014 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Concentration Range
Community	Cl_2	MR+ / MR Pro	20	0	NA	<0.1 ppm
	LEL	MR+ / MR Pro	20	0	NA	<1 %
	O_2	MR+ / MR Pro	20	20	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	20	0	NA	<0.1 ppm
	SO_2	MR+	20	0	NA	<0.1 ppm
	H_2SO_4	Gastec 35	20	0	NA	<0.2 mg/m^3
	VOC	MR+ / MR Pro	20	0	NA	<0.1 ppm
Exclusion Zone	Cl_2	Gastec 8La	2	0	NA	<0.05 ppm
		MR+ / MR Pro	1	0	NA	<0.1 ppm
	H_2S	MR+ / MR Pro	10	0	NA	<1 ppm
	HCl	Gastec 14	2	0	NA	<0.05 ppm
	LEL	MR+ / MR Pro	11	0	NA	<1 %
	O_2	MR+ / MR Pro	8	8	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	2	0	NA	<0.1 ppm
	SO_2	MR+	11	0	NA	<0.1 ppm
	H_2SO_4	Gastec 35	1	0	NA	<0.2 mg/m^3
	VOC	MR+ / MR Pro	11	1	0.2	0.2 - 0.2 ppm
Work Area	H_2S	MR+ / MR Pro	22	0	NA	<0.1 ppm
	LEL	MR+ / MR Pro	7	0	NA	<1 %
	O_2	MR+ / MR Pro	2	2	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	3	0	NA	<0.1 ppm
	SO_2	MR+	19	0	NA	<0.1 ppm
	H_2SO_4	Gastec 35	3	0	NA	<0.2 mg/m^3
	VOC	MR+ / MR Pro	22	0	NA	<0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 2: AreaRAE Air Monitoring Summary[1]
December 02, 2014, 2014 07:00 – December 03, 2014 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range
Unit 01	H_2S	5526	0	NA	< 0.1 ppm
	LEL	5526	0	NA	< 1 %
	SO_2	5526	0	NA	< 0.1 ppm
	VOC	5526	1	0.1 ppm	0.1 - 0.1 ppm
Unit 02	H_2S	5506	98	0.1 ppm	0.1 - 0.1 ppm
	LEL	5506	72	2.50%	2.4 - 2.9 %
	SO_2	5506	0	NA	< 0.1 ppm
	VOC	5506	5	0.1 ppm	0.1 - 0.3 ppm
Unit 03	H_2S	5531	2	0.1 ppm	0.1 - 0.1 ppm
	LEL	5531	0	NA	< 1 %
	SO_2	5531	0	NA	< 0.1 ppm
	VOC	5531	2	0.3 ppm	0.2 - 0.4 ppm
Unit 04	H_2S	5472	17	0.1 ppm	0.1 - 0.1 ppm
	LEL	5472	0	NA	< 1 %
	SO2	5472	0	NA	< 0.1 ppm
	VOC	5472	0	NA	< 0.1 ppm
Unit 05	H_2S	1477	0	NA	< 0.1 ppm
	LEL	1477	0	NA	< 1 %
	SO_2	1477	0	NA	< 0.1 ppm
	VOC	1477	0	NA	< 0.1 ppm
Unit 06	H_2S	1453	0	NA	< 0.1 ppm
	LEL	1453	0	NA	< 1 %
	SO_2	1453	96	0.1 ppm	0.1 - 0.2 ppm
	VOC	1453	46	0.1 ppm	0.1 - 0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
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Appendix A

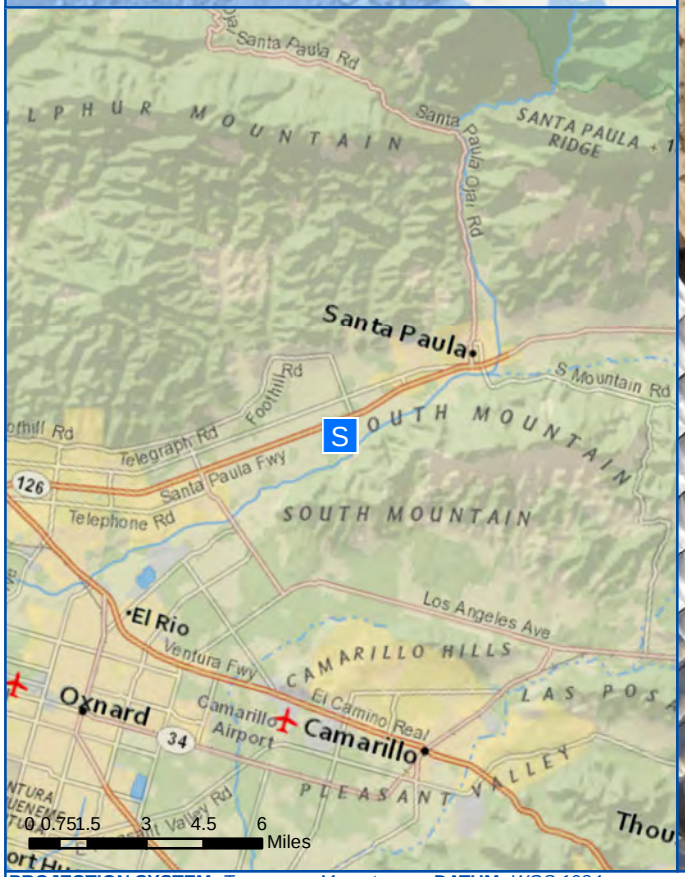
Incident Maps:

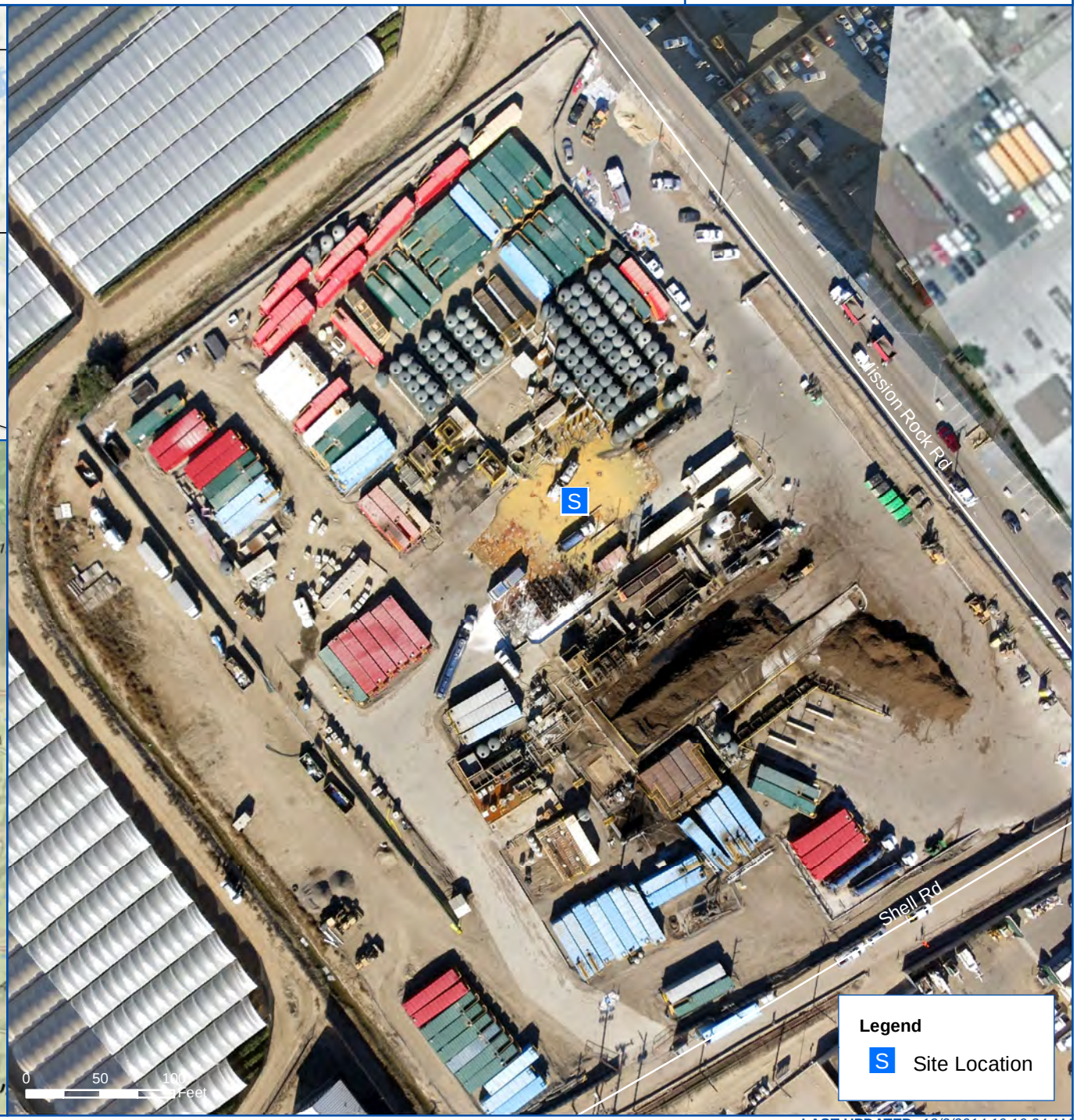
Real-time Air Monitoring Locations and Incident Site

Site Location

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura





PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/2/2014 10:10:34 AM*

Aerial Overview - 12/02/2014

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/3/2014 4:15:30 PM*

Manually Logged Real-Time Air Monitoring Concentrations

VOC - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *12/3/2014 4:01:08 PM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2SO_4 - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *12/3/2014 12:52:19 PM*

Manually Logged Real-Time Air Monitoring Concentrations

SO_2 - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84* Print Date: *12/3/2014 12:51:02 PM*

Manually Logged Real-Time Air Monitoring Concentrations

Peroxides - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/3/2014 11:43:57 AM*

Manually Logged Real-Time Air Monitoring Concentrations

O_2 - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/3/2014 9:12:45 AM*

Manually Logged Real-Time Air Monitoring Concentrations

LEL - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/3/2014 9:11:41 AM*

Manually Logged Real-Time Air Monitoring Concentrations

HCl - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *12/3/2014 9:10:22 AM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2S - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *12/3/2014 9:06:35 AM*

Manually Logged Real-Time Air Monitoring Concentrations

Cl_2 - Dec 02, 2014 07:00 to Dec 03, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *12/3/2014 9:04:34 AM*

Appendix B:

AreaRAE Trend Graphs, AM510 Trend Graphs, and AreaRAE/AM510 Air Monitoring Location Map

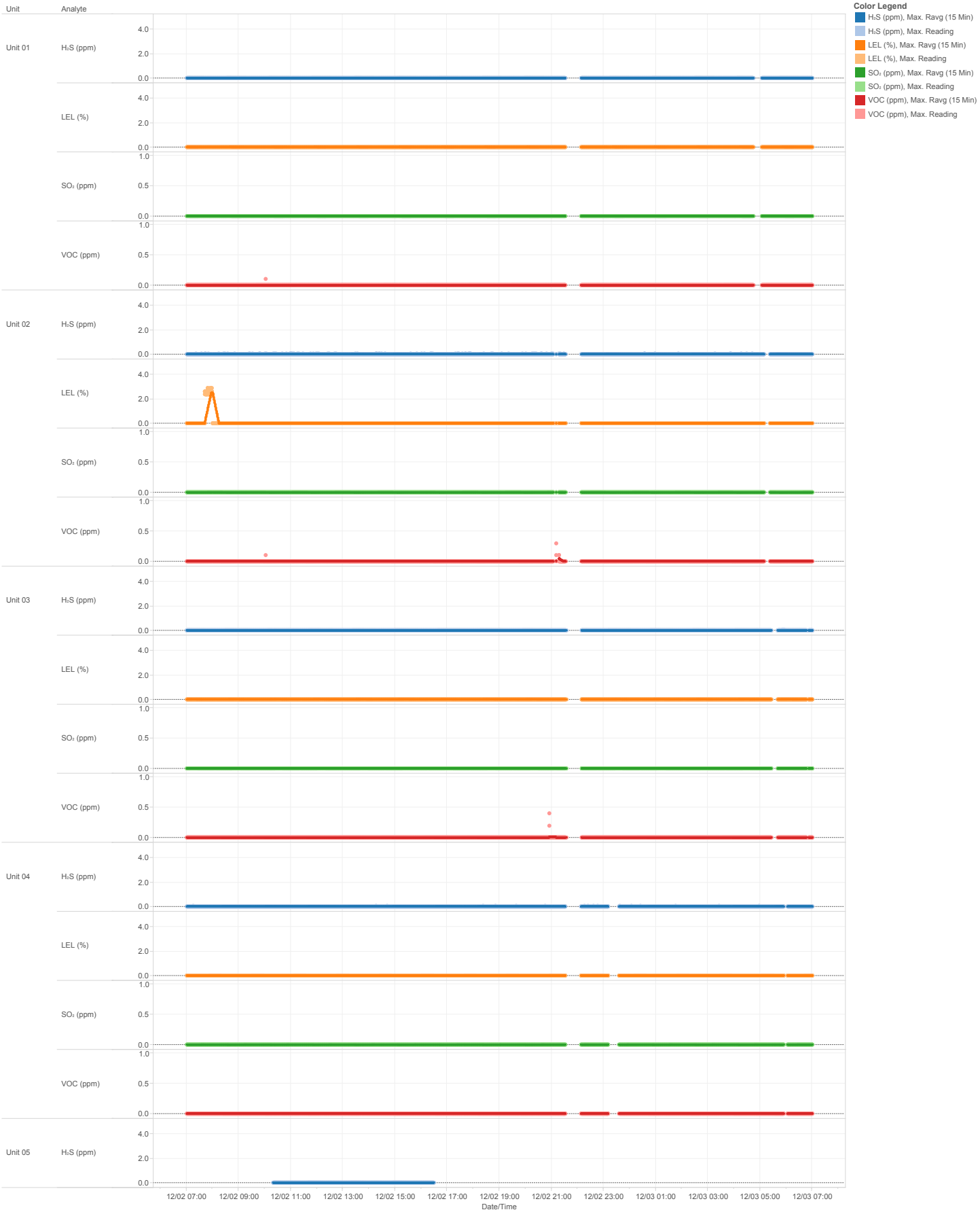
AreaRAE and AM510 Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

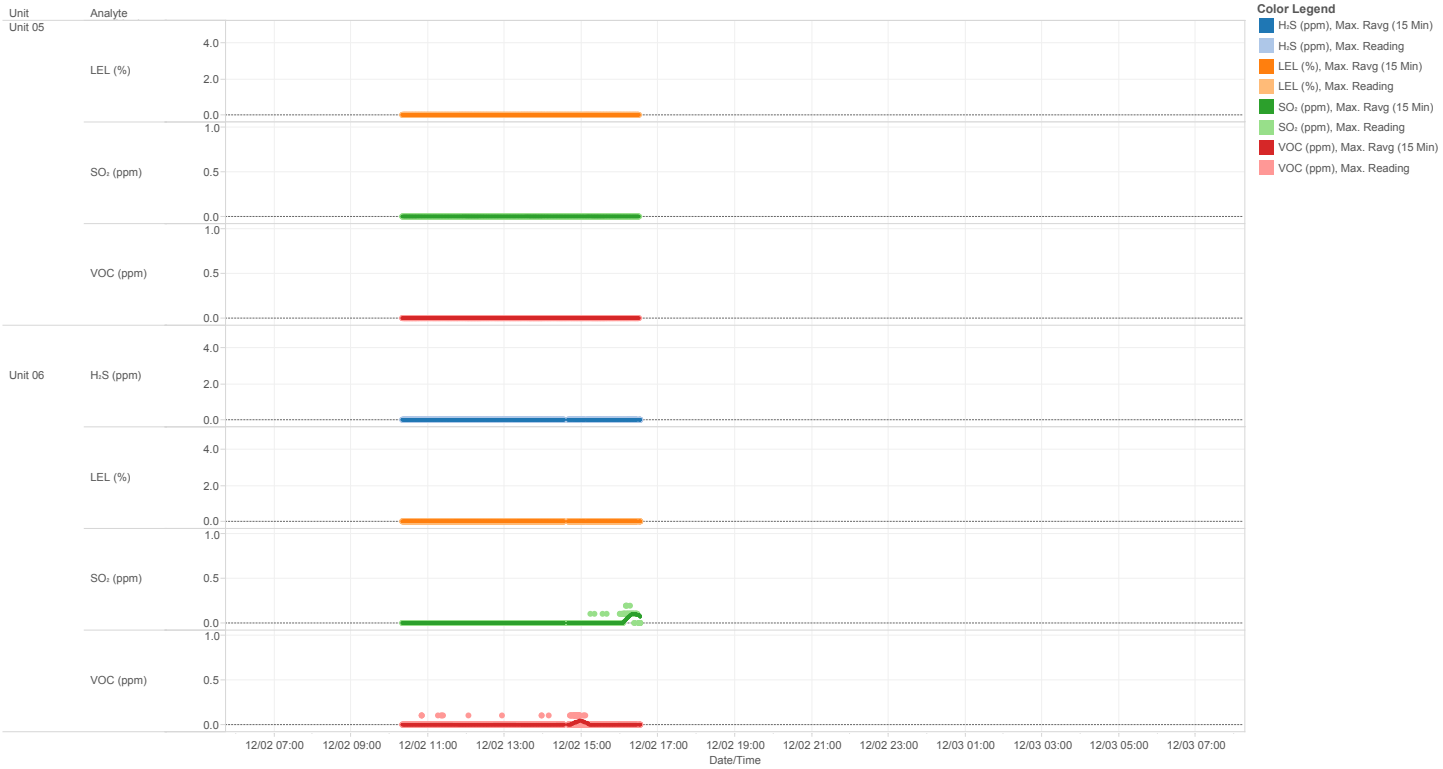
PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/3/2014 4:11:23 PM*

Patriot Environmental
AreaRAE Trend Graphs
12/02/2014 07:00 - 12/03/2014 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
AreaRAE Trend Graphs
12/02/2014 07:00 - 12/03/2014 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"